Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Asthma in pregnancy.

Bibliographic Source(s)

American College of Obstetricians and Gynecologists (ACOG). Asthma in pregnancy. Washington (DC): American College of Obstetricians and Gynecologists (ACOG); 2008 Feb. 8 p. (ACOG practice bulletin; no. 90). [26 references]

Guideline Status

This is the current release of the guideline.

The American College of Obstetricians and Gynecologists (ACOG) reaffirmed the currency of this guideline in 2012.

Recommendations

Major Recommendations

The grades of evidence (I-III) and levels of recommendations (A-C) are defined at the end of "Major Recommendations" field.

The following recommendations and conclusions are based on limited or inconsistent scientific evidence (Level B):

It is safer for pregnant women with asthma to be treated with asthma medications than it is for them to have asthma symptoms and exacerbations.
Clinical evaluation of asthma includes subjective assessments and pulmonary function tests.
The ultimate goal of asthma therapy in pregnancy is maintaining adequate oxygenation of the fetus by preventing hypoxic episodes in the mother.
The step-care therapeutic approach (see box below) increases the number and dosage of medications with increasing asthma severity.
Inhaled corticosteroids are first-line controller therapy for persistent asthma during pregnancy.
Budesonide is the preferred inhaled corticosteroid for use during pregnancy.
Inhaled albuterol is recommended rescue therapy for pregnant women with asthma.
Identifying and controlling or avoiding factors such as allergens and irritants, particularly tobacco smoke, can lead to improved maternal well-being with less need for medication.
Continuation of immunotherapy is recommended in patients who are at or near a maintenance dose, not experiencing adverse reactions to the injections, and apparently deriving clinical benefit.
Use of prednisone, theophylline, antihistamines, inhaled corticosteroids, beta$_2$-agonists, and cromolyn is not contraindicated for breastfeeding.

Step Therapy Medical Management of Asthma During Pregnancy

Mild Intermittent Asthma

No daily medications, albuterol as needed

Mild Persistent Asthma

Preferred – Low-dose inhaled corticosteroid
Alternative – Cromolyn, leukotriene receptor antagonist, or theophylline (serum level 5 to 12 mcg/mL)

Moderate Persistent Asthma

Preferred – Low-dose inhaled corticosteroid and salmeterol or medium-dose inhaled corticosteroid or (if needed) medium-dose inhaled corticosteroid and salmeterol
Alternative – Low-dose or (if needed) medium-dose inhaled corticosteroid and either leukotriene receptor antagonist or theophylline (serum level 5 to 12 mcg/mL)

Severe Persistent Asthma

Preferred – High-dose inhaled corticosteroid and salmeterol and (if needed) oral corticosteroid
Alternative – High-dose inhaled corticosteroid and theophylline (serum level 5 to 12 mcg/mL) and oral corticosteroid if needed

The following recommendations and conclusions are based primarily on consensus and expert opinion (Level C):

Asthma self-management skills, including self-monitoring, correct use of inhalers, and following a plan for long-term management of asthma and promptly handling signs of worsening asthma, enhance asthma control.
For pulmonary function assessment of patients during outpatient visits, spirometry is preferable, but peak expiratory flow measurement with a peak flow meter also is sufficient.
Ultrasound examinations and antenatal fetal testing should be considered for women who have moderate or severe asthma during pregnancy.
Pregnant patients with asthma, even those with mild or well-controlled disease, need to be monitored with peak expiratory flow rate (PEFR) and forced expiratory volume in the first second of expiration (FEV_1) testing as well as by observing their symptoms during pregnancy.
Routine evaluation of pulmonary function in pregnant women with persistent asthma is recommended.
Because pulmonary function and asthma severity may change during the course of pregnancy, routine evaluation of pulmonary function in pregnant women with persistent asthma is recommended.

Definitions:

Grades of Evidence

I Evidence obtained from at least one properly designed randomized controlled trial.

II-1 Evidence obtained from well-designed controlled trials without randomization.

II-2 Evidence obtained from well-designed cohort or case–control analytic studies, preferably from more than one center or research group.

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Levels of Recommendation

Level A — Recommendations are based on good and consistent scientific evidence.

Level B — Recommendations are based on limited or inconsistent scientific evidence.

Level C — Recommendations are based primarily on consensus and expert opinion.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Asthma in pregnancy

Guideline Category

Counseling

Diagnosis

Evaluation

Management

Treatment

Clinical Specialty

Obstetrics and Gynecology

Pulmonary Medicine

Intended Users

Physicians

Guideline Objective(s)

To aid practitioners in making decisions about appropriate obstetric and gynecologic care
To review the best available evidence about the management of asthma during pregnancy

Target Population

Pregnant women with asthma

Interventions and Practices Considered

Evaluation and Diagnosis

- Subjective assessment
  - Physical examination
  - History of symptoms, temporal relationships, triggers
  - Pulmonary impairment: asthma severity classification
  - Response to asthma therapy
- Pulmonary function tests

- Spirometry: and forced expiratory volume in the first second of expiration (FEV_1)
- Peak expiratory flow rate (PEFR)
- Fetal assessment during acute asthma

Management and Treatment

- Allergen immunotherapy (allergy shots) during pregnancy (considered but not recommended unless patient is at or near maintenance dose)
- Pharmacologic approaches
  - Inhaled short-acting beta$_2$-agonist (albuterol) as rescue therapy
  - Inhaled corticosteroids (budesonide) as long-term controller therapy
  - Alternative add-on medications (long-acting beta$_2$-agonists, cromolyn, leukotriene antagonist, theophylline)
- Step therapy medical management of asthma
- Emphasizing asthma self-management skills
- Nonpharmacologic approaches
  - Identifying and controlling or avoiding allergens and irritants
- Discharge regimen
- Fetal surveillance
  - Ultrasound
  - Antenatal fetal testing
- Counseling about breastfeeding

Major Outcomes Considered

- Maternal and perinatal pregnancy outcomes
  - Prematurity
  - Need for cesarean delivery
  - Pre-eclampsia
  - Fetal growth restriction
- Maternal morbidity and mortality
- Drug side effects
- Hospitalization rate

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

2008 Original Guideline

The MEDLINE database, the Cochrane Library, and the American College of Obstetricians and Gynecologists' own internal resources and documents were used to conduct a literature search to locate relevant articles published between January 1985 and March 2007. The search was restricted to articles published in the English language. Priority was given to articles reporting results of original research, although review articles and commentaries also were consulted. Abstracts of research presented at symposia and scientific conferences were not considered adequate for inclusion in this document. Guidelines published by organizations or institutions such as the National Institutes of Health and the American College of Obstetricians and Gynecologists were reviewed, and additional studies were located by reviewing bibliographies of identified articles.

2012 Reaffirmation

The NCBI database was searched from 2008 to 2012. Committee members conducted a literature search with the assistance from the ACOG Resource Center staff who routinely perform the Practice Bulletin literature searches.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Studies were reviewed and evaluated for quality according to the method outlined by the U.S. Preventive Services Task Force:

I Evidence obtained from at least one properly designed randomized controlled trial.

II-1 Evidence obtained from well-designed controlled trials without randomization.

II-2 Evidence obtained from well-designed cohort or case–control analytic studies, preferably from more than one center or research group.

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

2008 Original Guideline

Analysis of available evidence was given priority in formulating recommendations. When reliable research was not available, expert opinions from obstetrician–gynecologists were used. See also the "Rating Scheme for the Strength of Recommendations" field regarding Grade C recommendations.

2012 Reaffirmation

The Committee on Practice Bulletins - Obstetrics met in October 2012 and reaffirmed this document. A committee member reviewed the document and new literature on the topic. The document was then reviewed by the committee and the committee agreed that it is current and accurate.

Rating Scheme for the Strength of the Recommendations

Based on the highest level of evidence found in the data, recommendations are provided and graded according to the following categories:

Level A — Recommendations are based on good and consistent scientific evidence.

Level B — Recommendations are based on limited or inconsistent scientific evidence.

Level C — Recommendations are based primarily on consensus and expert opinion.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Practice Bulletins are validated by two internal clinical review panels composed of practicing obstetrician-gynecologists generalists and sub-specialists. The final guidelines are also reviewed and approved by the American College of Obstetricians and Gynecologists (ACOG) Executive Board.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management of asthma during pregnancy

Potential Harms

Drug side effects

Contraindications

Contraindications

Risk-benefit considerations do not usually favor beginning allergen immunotherapy during pregnancy.

Qualifying Statements

Qualifying Statements

These guidelines should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2008 Feb (reaffirmed 2012)

Guideline Developer(s)

American College of Obstetricians and Gynecologists - Medical Specialty Society

Source(s) of Funding

American College of Obstetricians and Gynecologists (ACOG)

Guideline Committee

American College of Obstetricians and Gynecologists (ACOG) Committee on Practice Bulletins - Obstetrics

Composition of Group That Authored the Guideline

Not stated

Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

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Guideline Availability

Electronic copies: None available

Print copies: Available for purchase from the American College of Obstetricians and Gynecologists (ACOG) Distribution Center, PO Box 933104, Atlanta, GA 31193-3104; telephone, 800-762-2264, ext. 192; e-mail: sales@acog.org. The ACOG Bookstore is available online at the ACOG Web site.

Availability of Companion Documents

Proposed performance measures are included in the original guideline document.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on July 30, 2008. The information was verified by the guideline developer on August 20, 2008. This summary was updated by ECRI Institute on May 14, 2010 following the U.S. Food and Drug Administration (FDA) advisory on Long-Acting Beta-Agonists (LABAs). The currency of the guideline was reaffirmed by the developer in 2012 and this summary was updated by ECRI Institute on March 7, 2014.

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